

## 12. General Diagnostic Table

### A: INSPECTION

#### 1. CLUTCH

| Symptom   | Possible cause                                      | Corrective                          |
|---|---|-------------------------------------|
| <p>1. Clutch slippage.<br/>It is hard to perceive clutch slippage in the early stage, but pay attention to the following symptoms</p> <ul style="list-style-type: none"> <li>• Engine speed up when shifting.</li> <li>• High speed driving is impossible; especially rapid acceleration impossible and vehicle speed does not increase in proportion to an increase in engine speed.</li> <li>• Power falls, particularly when ascending a slope, and there is a smell of burning of the clutch facing.</li> <li>• Method of testing: Put the vehicle in stationary condition with parking brake fully applied. Disengage the clutch and shift the transmission gear into the first. Gradually allow the clutch to engage while gradually increasing the engine speed. The clutch function is satisfactory if the engine stalls. However, the clutch is slipping if the vehicle does not start off and the engine does not stall.</li> </ul> | (a) Clutch facing smeared by oil                    | Replace.                            |
|   | (b) Worn clutch facing                              | Replace.                            |
|   | (c) Deteriorated diaphragm spring                   | Replace.                            |
|   | (d) Distorted pressure plate or flywheel            | Correct or replace.                 |
|   | (e) Defective release bearing holder                | Correct or replace.                 |
| <p>2. Clutch drags.<br/>As a symptom of this trouble, a harsh scratching noise develops and control becomes quite difficult when shifting gears. The symptom becomes more apparent when shifting into the first gear. However, because much trouble of this sort is due to defective synchronization mechanism, carry out the test as described after.</p> <ul style="list-style-type: none"> <li>• Method of testing: &lt;Ref. to CL-32, DIAGNOSTIC DIAGRAM OF CLUTCH DRAG, INSPECTION, General Diagnostic Table.&gt;</li> </ul> <p>It may be judged as insufficient disengagement of clutch if any noise occurs during this test.</p>   | (a) Worn or rusty clutch disc hub spline            | Replace the clutch disc.            |
|   | (b) Excessive deflection of clutch disc facing      | Correct or replace.                 |
|   | (c) Malfunction of crankshaft pilot bearing         | Replace.                            |
|   | (d) Cracked clutch disc facing                      | Replace.                            |
|   | (e) Sticked clutch disc (smeared by oil or water)   | Replace.                            |
| <p>3. Clutch chatters.<br/>Clutch chattering is an unpleasant vibration to the whole body when the vehicle is just started with clutch partially engaged.</p>   | (a) Adhesion of oil on the facing                   | Replace the clutch disc.            |
|   | (b) Weak or broken torsion spring                   | Replace the clutch disc.            |
|   | (c) Defective facing contact or excessive disc worn | Replace the clutch disc deflection. |
|   | (d) Warped pressure plate or flywheel               | Correct or replace.                 |
|   | (e) Loose disc rivets                               | Replace the clutch disc.            |
|   | (f) Loose engine mounting                           | Retighten or replace the mounting.  |
|   | (g) Improper adjustment of pitching stopper         | Adjustment.                         |

# GENERAL DIAGNOSTIC TABLE

## CLUTCH SYSTEM

| Symptom  | Possible cause   | Corrective  |
|--|--|---|
| 4. Noisy clutch<br>Examine whether the noise is generated when the clutch is disengaged, engaged, or partially engaged.  | (a) Broken, worn or unlubricated release bearing       | Replace the release bearing.  |
|  | (b) Insufficient lubrication of pilot bearing          | Apply grease.   |
|  | (c) Loose clutch disc hub                              | Replace the clutch disc.  |
|  | (d) Loose torsion spring retainer                      | Replace the clutch disc.  |
|  | (e) Deteriorated or broken torsion spring              | Replace the clutch disc.  |
| 5. Clutch grabs.<br>When starting the vehicle with the clutch partially engaged, the clutch engages suddenly and the vehicle jumps instead of making a smooth start. | (a) Grease or oil on facing                            | Replace the clutch disc.  |
|  | (b) Deteriorated torsion spring                        | Replace the clutch disc.  |
|  | (c) Worn or rusted spline of clutch disc or main shaft | Take off rust, apply grease or replace the clutch disc or main shaft. |
|  | (d) Deteriorated or broken torsion spring              | Replace the clutch disc.  |
|  | (e) Loose engine mounting                              | Retighten or replace the mounting.                                    |
|  | (f) Deteriorated diaphragm spring                      | Replace.  |

## 2. CLUTCH PEDAL

| Trouble  | Corrective action                            |
|--|--|
| Insufficient pedal play                                | Adjust pedal play.                           |
| Clutch pedal free play insufficient                    | Adjust pedal free play.                      |
| Excessively worn or damaged pedal shaft and/or bushing | Replace the bushing or shaft with a new one. |

## 3. DIAGNOSTIC DIAGRAM OF CLUTCH DRAG

| Step   | Check  | Yes  | No   |
|--|--|--|--|
| <b>1 CHECK GEAR NOISE.</b><br>1) Start the engine.<br>2) Disengage the clutch and shift quickly from neutral to reverse in idling condition.   | Is there any noise from the transmission gear? | Go to step 2.  | Clutch is normal.  |
| <b>2 CHECK GEAR NOISE.</b><br>Disengage the clutch at idle and shift from neutral to reverse within 0.5 — 1.0 seconds.   | Is there any noise from the transmission gear? | Go to step 3.  | Defective transmission or excessive clutch drag torque. Inspect the pilot bearing, clutch disc, transmission and clutch disc hub spline. |
| <b>3 CHECK GEAR NOISE.</b><br>1) Disengage the clutch at idle and shift from neutral to reverse within 0.5 — 1.0 seconds.<br>2) With the clutch disengaged, shift from neutral to reverse, reverse to neutral several times. | Is there any noise from the transmission gear? | Defect in clutch disengaging. Inspect the clutch disc, clutch cover, clutch release, and clutch pedal free play. | Clutch and fly-wheel seizure. Inspect the clutch disc, spline of clutch disc hub.  |